a digital equalizer connected for receiving the demodulated complex valued digital signal, comprising:

a first filter operable for receiving the demodulated complex valued digital signal;

a second filter connected to the first filter and operable for reducing the amount of noise and inter symbol interference in the demodulated complex valued digital signal without the use of training data; and

a symbol-to bit converter connected to the second filter.

21. (Original) The communication receiver according to claim 1 wherein the receiver is used with a digital subscriber loop of a telephone network.

22. (Original) The communication receiver according to claim 1 wherein the receiver is used with a coaxial cable television infrastructure.

REMARKS

Claim 3 has been cancelled. Claims 7, 10, 11, 13, 14, and 16 have been amended. Claims 1, 2, and 4-22 remain in the application for consideration by the Examiner. Reconsideration and withdrawal of the outstanding rejections are respectfully requested in light of the following remarks.

Applicants have amended the Specification as indicated above to correct minor typographical errors. Applicants have cancelled Claim 3 in that the limitations of Claim 3 were included in Claim 1 in a previous amendment to Claim 1. Applicants have amended Claim 7 as indicated above to correct a typographical error in that a comma, ',' was used instead of a semicolon, ';' at the end of the line 8 in Claim 7. Applicants have amended Claim 10 to correct a typographical error in that the word 'for' was inadvertently left out of line 2 of Claim 10. Applicants have

amended Claim 11 to correct a typographical error in that the word "for" was inadvertently left out of line 2 of Claim 11. Applicants have amended Claim 13 to correct a typographical error in that the word "for" was inadvertently left out of line 2 of Claim 13. The Applicants have amended Claim 14 to correct a typographical error in that the word "an" was inadvertently left in line 9 of Claim 14. Applicants have amended Claim 16 to correct typographical errors where "finite impulse response filter" was inadvertently written as "finite response filter" and where "finite impulse response filter" was inadvertently written as "finite input response filter".

In numbered paragraph 2 on page 2 of the Office Action, the Examiner alleges that the declaration is defective because the signature of the second named inventor, Ofir Shalvi, is in pencil, and is therefore not in permanent ink, as required under 37 CFR 1.52(a). Applicants respectfully traverse and request that the Examiner review the signature in that Applicants have received back the recorded assignment documents from the USPTO which also have a light colored signature by the second named inventor. However, Applicants respectfully point out that the signature of the second named inventor on those assignment documents, although lightly written in black ink, does meet the requirements under 37 CFR 1.52(a) and was accepted by the assignment section of the USPTO. Applicants therefore respectfully submit that this may also be the case with respect to the declaration and therefore respectfully request that the Examiner reconsider and withdraw the allegation.

In numbered paragraphs 6-7 on page 3 of the Office Action, the Examiner rejected Claims 1, 3, 4, and 20 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,550,596 ("Strolle"). Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection for at least the following reasons.

Applicants respectfully point the Examiner to Column 5, lines 28-31 of Strolle which discloses that "[f]orward equalizer 14 is a filter that also removes some of the Inter Symbol Interference (ISI)" and that "[f]eedback equalizer 22 then removes the rest of the ISI, including any ISI generated by filter 18." The device in Strolle teaches that there are three filters and not two as disclosed by the Applicants in Claims 1 and 20. Furthermore, Applicants claim in Claims 1 and 20 "a second filter . . . operable for reducing the amount of noise" in addition to reducing inter symbol interference without the use of training data. Applicants again respectfully submit that in column 3 line 6 Strolle merely states that equalizer 14, which is only one of the three filters disclosed, "is initialized using blind equalization or using training signal techniques". Applicants respectfully point out that Applicants' alleged admission on page 7 of Applicants' response to the previous Office Action states no more than this. However, since equalizer 14 in Strolle is not the same as the claimed second filter in Applicants' Claims 1 and 20, the fact that equalizer 14 is initialized using blind equalization or using training signal techniques is of no moment. The Examiner has not shown how Stolle discloses or teaches that the alleged second filter in Strolle performs either or both of the functions of the second filter claimed by Applicants in independent Claims 1 and 20.

Claim 3 has been cancelled. Claim 4, which depends from Claim 1, is not anticipated by Strolle within the meaning of 35 U.S.C. §102(e) for at least the same reasons given above with respect to Claim 1.

Thus, Applicant contends that Claims 1, 4 and 20 are not anticipated by and are thus patentable over Strolle within the meaning of 35 U.S.C. §102(e). Reconsideration and withdrawal of the Examiner's rejection of Claims 1, 4 and 20 are therefore respectfully requested.

In numbered paragraphs 8-9 starting on page 4 of the Office Action, the Examiner rejected Claims 1, 7-15, 20 and 21 under 35 U.S.C. §103(a) as unpatentable

over U.S. Patent 5,283,811 ("Chennakeshu") in view of U.S. Patent 5,539,774 ("Nobakht"). Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection for at least the following reasons.

First, Applicants respectfully contend that the invention claimed by Applicants in independent Claims 1 and 20 is not made obvious by Chennakeshu in view of Nobakht in that Chennakeshu in view of Nobakht does not teach or suggest the invention as claimed by Applicants in Claims 1 and 20. The Examiner characterizes Chennakshu on page 4 starting at about line 14 of the Office Action as disclosed in Fig. 2 (as described at column 5, lines 42-54) "a front end unit performing analog to digital conversion, demodulating the modulated analog signal to extract the digital information, performing timing control, and producing a demodulated complex-valued digital signal." It is not clear to Applicants which portions of Fig. 2 the Examiner considers to be the "front end unit" as claimed by Applicants in independent Claims 1 and 20, however, Applicants respectfully traverse the Examiner's characterization of Chennakeshu and point out to the Examiner that in column 5, lines 52-54, Chennakeshu teaches that "[a]nother task of demodulator 30 is to process the incoming bit stream to achieve and maintain frame/slot synchronization." Applicants contend that this "frame/slot synchronization" as disclosed by Channakeshu is the timing control and since demodulator 30 is not disclosed or taught by Channakeshu as being part of a 'front end' as claimed by Applicants in Claims 1 and 20, the alleged front end disclosed by Chennakeshu is not the same as the front end claimed by Applicants in that the front end disclosed by Chennakeshu does not perform timing control.

The Examiner further states, starting at about line 17 of the Office Action that Chennakeshu "discloses in Fig. 3 a first filter for receiving the demodulated complex valued digital signal and a second filter (comprising DFE equalizer 40) that reduces the intersymbol interference." Fig. 3 is a detailed drawing of the demodulator 30 discussed above. In Applicants independent Claims 1 and 20 it is the second filter,

and not the front end unit that perform the timing control function. Therefore, Applicants also respectfully contend that the Examiner's statement, starting on page 4 at about line 19 of the Office Action, that "[t]he first filter is considered to comprise the wire for transferring the demodulated complex valued digital signal to the second filter since it performs the function of the first filter as defined in the claim" is of no moment in that the alleged second filter disclosed by Chennakeshu is not the same as and does not teach or suggest the second filter claimed by Applicants in independent Claims 1 and 20.

Applicants agree with the Examiner's statement, starting on page 4 at about line 24 of the Office Action, that Chennakeshu does not disclose that the equalizer reduces the intersymbol interference without the use of training data. The Examiner then states on page 4 starting at about line 26 of the Office Action that Nobakht "teaches the use of blind equalization for the purposes of removing intersymbol interference" and that it would have been obvious to one of ordinary skill in the art to use the teaching of Nobakht in the equalizer of Chennakeshu in order to provide uninterrupted data transmission because there is no need to send a training sequence when incorrect decisions are made or the transmission channel characteristics change." Applicants respectfully contend that the Examiner's characterization of Nobakht and alleged motivation to modify or combine the teachings of Chennakeshu with those in Nobakht are of no moment since, as noted above with respect to independent Claims 1 and 20, Chennakeshu does not teach or suggest the claimed invention. Nonetheless, Applicants contend that the combination of Chennakeshu and Nobakht does not overcome the noted defects in Chennakeshu to teach or suggest the claimed invention.

Applicants respectfully submit that Claims 7-15, and 21, which all depend from Claim 1, are patentable over Chennakeshu in view of Nobakht within the meaning of 35 U.S.C. §103(a) for at least the same reasons as noted above with respect to independent Claim 1.

Thus, Applicants contend that Claim 1, 7-15, 20, and 21 are patentable over Chennakeshu et al. in view of Nobakht et al. within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claims 1, 7-15, 20, and 21 are therefore respectfully requested.

In numbered paragraph 10 starting on page 5 of the Office Action, the Examiner rejected Claim 2 under 35 U.S.C. §103(a) as unpatentable over Chennakeshu in view of Nobakht and further in view of U.S. Patent 4,005,426. Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection for at least the same reasons provided above with respect to claim 1 from which claim 2 depends. Applicants further contend that assuming, *arguendo*, that the Examiner's characterization of White is correct, the combination of White with Chennakeshu in view of Nobakht does not overcome the alleged defects in Channakeshu or the combination of Chennakeshu in view of Nobakht for at least the reasons noted hereinabove with respect to independent Claim 1 from which Claim 2 depends. Thus, Applicants contend that Claim 2 is patentable over Chennakeshu in view of Nobakht and further in view of White within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 2 is therefore respectfully requested.

In numbered paragraph 11 starting on page 6 at about line 10 of the Office Action, the Examiner rejected Claim 16 under 35 U.S.C. §103(a) as unpatentable over Strolle in view of U.S. Patent 5,572,262 ("Ghosh") and further in view of U.S. Patent 4,843,583 ("White") and further in view of Chennakeshu. Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claim 16 for at least the following reasons.

Presuming, arguendo, that the Examiner's characterization of a front-end unit in Fig. 1 on page 6 at about lines 12-14 of the Office Action is correct, Applicants

contend that Strolle does not teach of suggest blind equalization in a decision feedback equalizer portion of a pre-equalizer as claimed by Applicants in Claim 16 in that the pre-equalizer taught or suggested by Strolle is not the same as the pre-equalizer claimed by Applicants. The Examiner states on page 6 starting at about line 14 of the Office Action that the pre-equalizer of Strolle comprises "a co-channel notch filter 18, a decision feedback equalizer comprising DFE 22, and a converter recovering the digital information." Assuming, *arguendo*, that the Examiner's characterization of the pre-equalizer in Strolle is correct, Applicants respectfully point out that Strolle merely teaches or suggests in column 3 line 6 that the feed-forward equalizer 14 as shown in Fig. 1 may initialize using blind equalization. Applicants contend that the combination of White with Chennakeshu in view of Nobakht does not overcome the alleged defects in Channakeshu or the combination of Chennakeshu in view of Nobakht for at least the reasons noted hereinabove with respect to independent Claim 1 from which Claim 2 depends.

Thus, Applicants contend that Claim 16 is patentable over Strolle in view of Ghosh and further in view of White and further in view of Chennakeshu within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 16 is therefore respectfully requested.

In numbered paragraph 12 starting on page 7 at about line 20 of the Office Action, the Examiner rejected Claim 17 under 35 U.S.C. §103(a) as unpatentable over Strolle in view of Ghosh. Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claim 17 for at least the following reasons. For at least the same reasons as noted above in Applicants' response to the Examiner's rejection of Claims 1 and 20 under 35 U.S.C. §102(e), Applicants respectfully traverse the Examiner's characterization of Strolle on page 7, at about lines 22-24, that Strolle teaches or suggests a front end operable to perform timing control. Applicants further respectfully traverses the Examiner's statement on page 8 at about lines 4-5 of the Office Action that "Strolle also states that the system may use

blind equalization (i.e. without training data) in column 3 line 6 in that, as noted above in Applicants' response to the Examiner's rejection of Claims 1 and 20 under 35 U.S.C. §102(e), Applicants contend that Strolle merely teaches that equalizer 14 in Fig. 1 (and not the system) may use blind equalization. Assuming, *arguendo*, that the Examiner's characterization of Ghosh (on page 8 at about line 8 of the Office Action) and of the motivation for combining or modifying Strolle with the teachings of Ghosh (on page 8 at about lines 9-12 of the Office Action) are correct, Applicants contend that this is of no moment since neither Ghosh nor the combination of Strolle in view of Ghosh overcome the above-noted defects. Thus, Applicants contend that Claim 17 is patentable over Strolle in view of Ghosh within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 17 is therefore respectfully requested.

In numbered paragraph 13 starting on page 8 at about line 18 of the Office Action, the Examiner rejected Claim 18 under 35 U.S.C. §103(a) as unpatentable over Strolle in view of Ghosh as applied to Claim 17 and further in view of U.S. Patent 4,843,583 ("White, et al.). Since Claim 18 depends from Claim 17, Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claim 18 for at least the same reasons given above with respect to Claim 17. Thus, Applicants contend that Claim 18 is patentable over Strolle in view of Ghosh and further in view of White et al within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 18 is therefore respectfully requested.

In numbered paragraph 14 starting on page 9 at about line 9 of the Office Action, the Examiner rejected Claim 19 under 35 U.S.C. §103(a) as unpatentable over Strolle in view of Ghosh as applied to Claim 17 and further in view of Chennakeshu. Since Claim 19 depends from Claim 17, Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claim 19 for at least the same reasons given above with respect to Claim 17. Thus, Applicants contend that

Claim 19 is patentable over Strolle in view of Ghosh and further in view of Chennakeshu within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 19 is therefore respectfully requested.

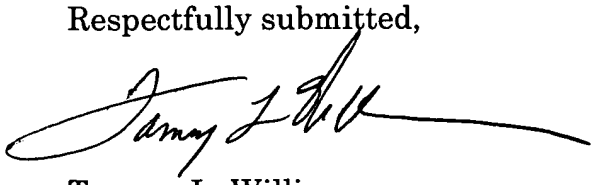
In numbered paragraph 15 starting on page 10 at about line 3 of the Office Action, the Examiner rejected Claim 5 under 35 U.S.C. §103(a) as unpatentable over Strolle in view of U.S. Patent 4,843,583 ("White, et al.). Since Claim 5 depends from Claim 1, Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claim 5 for at least the same reasons given above with respect to Claim 1. Thus, Applicants contend that Claim 5 is patentable over Strolle in view of White et al within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claim 5 is therefore respectfully requested.

In numbered paragraph 16 starting on page 10 at about line 11 of the Office Action, the Examiner rejected Claims 6 and 22 under 35 U.S.C. §103(a) as unpatentable over Strolle. Since Claims 6 and 22 depend from Claim 1, Applicants respectfully traverse and request reconsideration and withdrawal of the Examiner's rejection of Claims 6 and 22 for at least the same reasons given above with respect to Claim 1. Thus, Applicants contend that Claims 6 and 22 are patentable over Strolle within the meaning of 35 U.S.C. §103(a). Reconsideration and withdrawal of the Examiner's rejection of Claims 6 and 22 is therefore respectfully requested.

Applicants respectfully submit that the amendments and remarks herein are believed to be fully responsive to the Office action and, in light of the above, it is respectfully submitted that the present application is in condition for allowance, and notice to that effect is respectfully requested. While it is believed that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner contact the undersigned in order to expeditiously resolve any outstanding issues.

To the extent necessary, the Applicant petitions for an Extension of Time under 37 CFR 1.136. Please charge any fees in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 20-0668 of Texas Instruments Incorporated.

Respectfully submitted,



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